B.C.Hydro

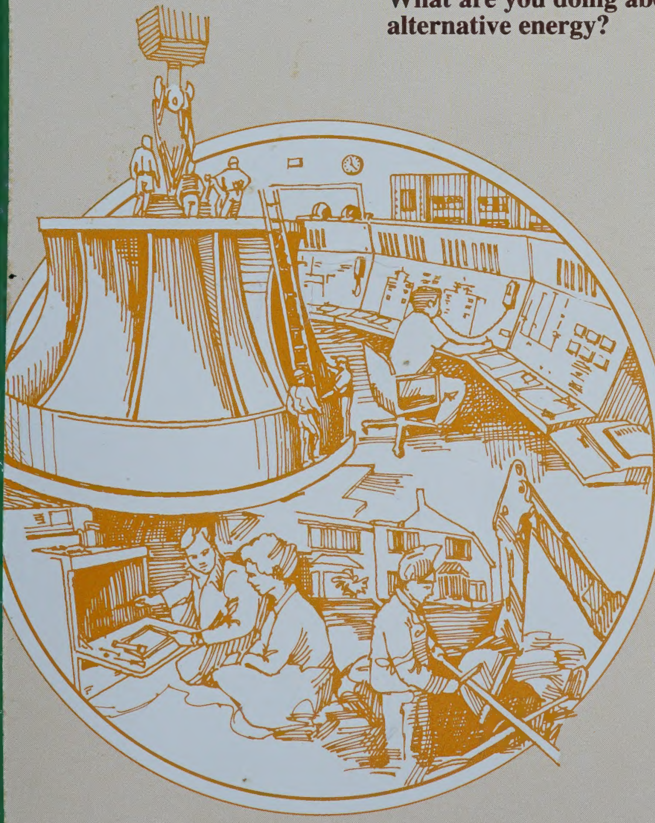
The answer book

What is B.C. Hydro doing about energy conservation?

Are you serious about protecting the environment?

Is it true that Hydro is accountable only to itself?

What are you doing about alternative energy?



Why have natural gas rat taken a big jump?

Is Hydro's debt threateni to bankrupt British Columbia?

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Introduction

In this booklet we answer some of the questions most frequently asked about energy in B.C. today. The topics include conservation, rates, environmental concerns, power exports and possible future sources of energy.

On the last page, you will find a guide to other sources of information about B.C. Hydro.

We welcome your questions and suggestions. Write to B.C. Hydro, Public Affairs, 970 Burrard St., 19th Floor, Vancouver, B.C. V6Z 1Y3.

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Does everybody in B.C. get electricity from B.C. Hydro?

Almost everybody.

At last count, B.C. Hydro was serving 1,046,146 electricity customers, representing about 93 per cent of the province's population.

What is B.C. Hydro doing about energy conservation?

B.C. Hydro aims at being a conservation leader. Most of our energy conservation budget goes into encouraging efficient energy use by developing more energy-efficient equipment and procedures.

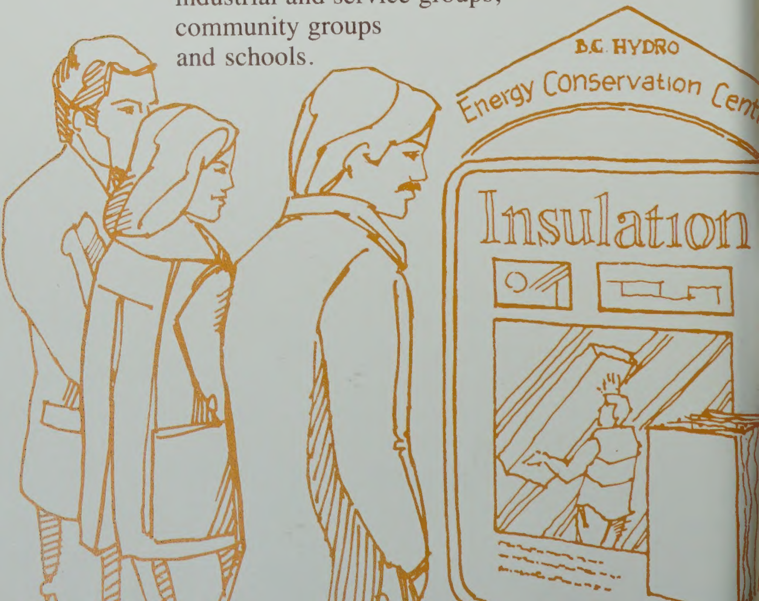
We offer a low-interest finance plan for home insulation. We administer the Canadian Off Oil Substitution Program (COSP) for customers who wish to convert from oil to natural gas.

Our aerial thermography surveys pinpoint heat loss from homes and other buildings, encouraging people to insulate. Hydro experts on energy efficiency give direct personal counselling to farmers and industrial customers.

When older premises are being renovated, we advise on making them energy-efficient. When new premises are being built, we encourage recommended insulation and passive solar construction with energy-efficient lighting and heating systems to give maximum value for energy dollars spent.

We produce free energy conservation material for schools and provide literature that gives advice on using energy efficiently in the home.

B.C. Hydro arranges energy conservation displays and exhibits at trade shows, malls and libraries and holds conservation conferences and seminars for industrial and service groups, community groups and schools.



We participate in programs like Energuide, a federal project concerned with labelling major appliances as to their energy use.

The Energy Efficient Home Program, designed by electric utilities across Canada, consists of a set of guidelines applicable to new or existing homes. It aims to minimize loss of heat from homes and to ensure the efficient operation of major appliances and equipment.

Commercial and industrial energy audits are done to make offices and commercial premises more energy-efficient. Aid is given in lighting designs and heating systems.

Why does B.C. Hydro promote conservation? Isn't that self-defeating?

Not at all. We don't exist to sell electricity. B.C. Hydro's mandate is to meet the electricity demands of the province in the most efficient way, and conservation means efficiency.

To finance new generating projects, Hydro must borrow large sums of money. The interest on that money represents a sizeable portion of our total costs. By reducing the demand for new energy, we are able to defer new projects, thereby reducing borrowing and interest.

Are you setting a conservation example for others to follow?

We're certainly trying. In all B.C. Hydro buildings, lighting and thermostat levels have been lowered significantly and reviews of energy efficiency have been undertaken. These reviews have resulted in many building modifications and changes in operating procedures.

Our new buildings and associated electrical-mechanical systems are designed to reduce overall energy consumption by 25 to 50 per cent of that in conventional structures. Some include such energy-savers as multiple glazing and heat pumps.

We have been asked why lights are on in our head office building in Vancouver beyond normal working hours. The reason is that, after the office staff leaves, the janitorial staff is on duty. As these workers finish their tasks in different sections, the main lights are turned off and only certain open-space lighting remains. The office lights are turned on again early in the morning.

On two floors of our head office, B.C. Hydro's conservation department is experimenting with lighting levels that change automatically to adjust to natural daylight.

Why not just subsidize conservation?

In one sense, we do—through our low-interes loans for home insulation.

Although direct subsidies might encourage immediate savings in energy, their effect probably would not be sustained, and the motivation would be saving money rather than saving energy.

B.C. Hydro believes that a long-term educational program, with many offshoots designed to reach different groups of people, will encourage the maximum number to make conservation a part of their daily lives.

What is B.C. Hydro doing about alternative energy?

We are involved in the development of many types of alternative energy.

Solar—We monitor private solar energy projects and are doing active research on solar cells and panels at our Research and Development Centre in Surrey.

Geothermal—Since 1973, in conjunction with the federal government, we have been exploring a geothermal site at Meager Creek in the Lillooet River valley. Results are encouraging.

Geothermal power uses steam or hot water trapped beneath the earth's surface to generate electricity.

Wind—In 1980-81 we gathered data from an experimental windmill at the southern tip of Vancouver Island and, in 1981, we initiated five additional wind experiments, two on Vancouver Island and three in the Queen Charlotte Islands. We hope that some day, as a result of these tests, we can add wind power to supplement diesel generation in remote communities not served by the B.C. electric grid.

We also are looking into tidal, small hydro, wood waste and coal technologies.

Because our job is to produce electricity to meet B.C.'s need, we must use proven, economic technologies for large-scale power production. We cannot and do not rely on undeveloped technologies—but we do keep abreast of all developments in the energy field, where governments and private industry undertake research that we cannot afford. Most of our research is done jointly with such organizations as the Canadian Electrical Association, National Research Council and various government agencies.

Will Hydro need to use nuclear power before the end of the century?

We have no plans for nuclear development in the province. The B.C. government has indicated clearly that this province has other power options and that nuclear power is a possibility we need not face for some time.

B.C. Hydro, of course, follows developments in nuclear technology just as it does those of other energy sources. If at some future date the problems of waste disposal, operating safety and high costs that plague today's nuclear industry are solved, we believe that our customers would expect us to examine nuclear power as an option for this province.

Are you serious about protecting the environment?

Among the first steps in studying the feasibility of any proposed Hydro project is a thorough study of the social and environmental effects it will have . . . effects on people, fish, wildlife, climate, agriculture, recreation and heritage resources.

B.C. Hydro reviews possible mitigation of adverse environmental effects. For instance, a hydroelectric project may affect fish habitat, but this may be mitigated by constructing a fish hatchery for eventual stocking of the reservoir, as was done at Peace Canyon.

Many other measures have been taken in recent years as the result of environmental studies and public input. Water flows were modified to accommodate salmon at the John Hart Dam on Campbell River. Park areas and marine facilities were provided, in co-operation with the parks branch, at Arrow Reservoir.

A transmission line near Cranbrook was routed for minimal impact on wildlife; another in the Okanagan Valley had its route and tower types selected to minimize visual impact.

Not all impacts are negative. When planning and constructing reservoirs, for instance, B.C. Hydro considers how these areas may help in irrigation and flood control, dovetail with industrial and municipal activities or provide recreation facilities and help conserve fish and wildlife.

Sailing, boat launching, picnic and camping facilities are among the recreational facilities most often provided in connection with a hydroelectric project. Reservoirs may be stocked with suitable fish species to attract sport fishing. Visitor centres at the powerhouses, with tours and historical displays, are popular tourist attractions.

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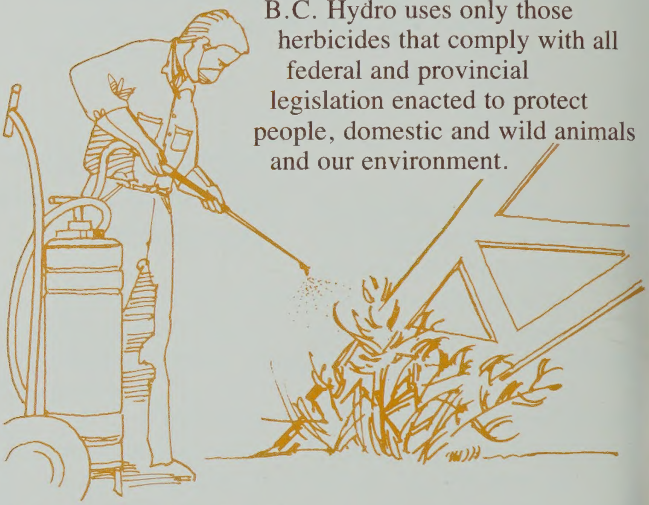
Why do you use herbicides on your rights-of-way?

Trees and high brush are potential hazards to power lines that can cause serious injury to our crews and interruptions in service to our customers.

Various methods may be used to manage vegetation along our 53,000 kilometres of power lines. They include manual, mechanical, biological and chemical controls, integrated to promote a stable, controlled plant community supportive of agriculture and wildlife, yet meeting our engineering needs.

Without herbicides, we cannot reach this goal. B.C. Hydro uses only those herbicides that comply with all federal and provincial legislation enacted to protect people, domestic and wild animals and our environment.



Is it true that B.C. Hydro is accountable only to itself?

Most certainly not. In fact, B.C. Hydro is accountable to over a dozen major authorities, including the B.C. cabinet and legislature, the British Columbia Utilities Commission, the Public Accounts Committee, the Committee on Crown Corporations, the Environmental Land Use Committee, the Pollution Control Board, the Comptroller of Water Rights, the National Energy Board (which must give approval for export of surplus electricity) and the Canadian Transport Commission (Vancouver and Lulu Island railway operation), among others.

The Utilities Commission Act of 1980 established a regulatory process for Hydro rates and a review process for major projects.

Hydro also must operate in accordance with such legislation as the Public Bodies Financial Information Act, the Employment Standards Act, th Environment Management Act, the Financial Information Act, the Labour Code, the Petroleum and Natural Gas Act and other statutes made applicable either as named in the British Columbia Hydro and Power Authority Act or provided for by orders-in-council.

Why is B.C. Hydro so secretive about its plans?

Actually, it isn't. Its annual publication, Electric System Plans, can be seen at B.C. Hydro's head office, and there are limited copies for distribution.

B.C. Hydro welcomes input into its planning. Once a potential project has been identified, there is an established procedure. First, environmental and socio-economic studies are done, usually by independent consultants under terms of reference which have been reviewed by government and by interested groups and individuals. The reports are also reviewed by government and, when complete, are released to the public.

Once this basic information is ready, public comments and suggestions are invited.

Far from planning in secrecy, B.C. Hydro holds public information meetings and discussion with local and regional government officials. Public concerns are identified and given consideration at an early stage in the planning process. Hydro representatives talk to those who would be affected by a project. For Site C, Hat Creek and Murphy Creek, information offices have been established locally.

How do you deal with landowners around your projects?

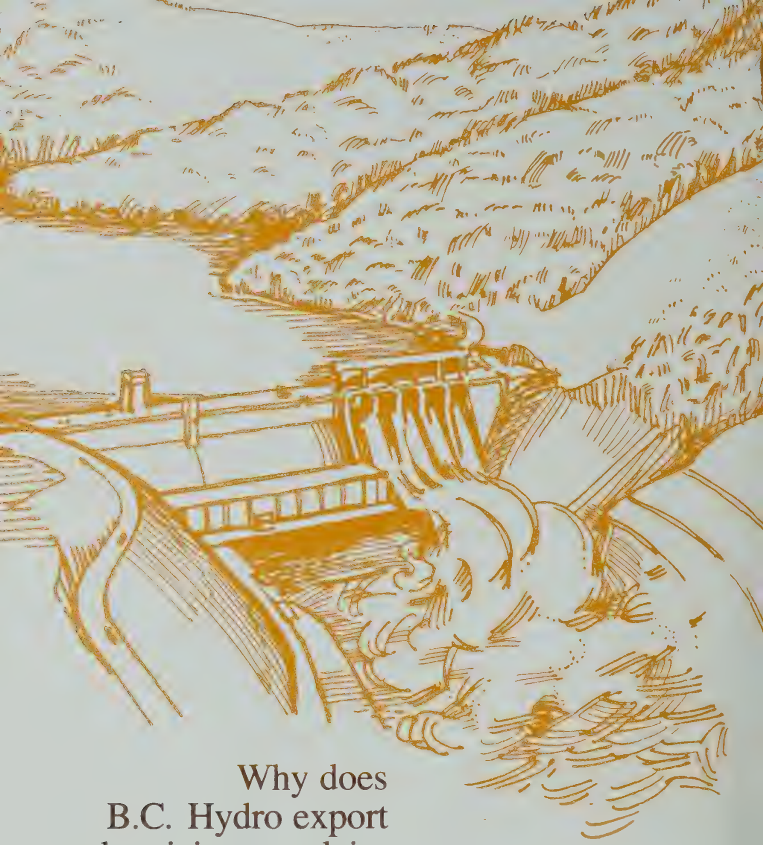
Land representatives of our Properties Division contact landowners affected by an approved project. They explain all the steps in the procedure of acquisition, answer questions and discuss the particular problems each landowner faces as a result of the proposed project.

A brochure, "Land Acquisition", prepared by our properties division and describing our land transaction procedures, is distributed.

Each affected property is appraised. An offer, based on the appraisal report, is presented to the owner. Detailed discussions are aimed at arriving at an agreement on the amount of compensation to be paid by B.C. Hydro to the owner.

Expropriation is considered only as a last resort when all reasonable avenues for reaching agreement have been explored. Expropriations must be approved by Hydro senior management and individually authorized by a provincial order-in-council.

If agreement cannot be reached after expropriation, then a valuator is appointed by order-in-council. The valuation decision can be appealed to the courts. Hydro is prepared, however, to negotiate to try to reach agreement at any stage up to a final determination.



Why does B.C. Hydro export electricity, yet claim it needs more generating plants?

The answer lies in the nature of a hydroelectric system.

Basic to the system is the amount of water stored behind the dams. This water is renewed every year at the time of the spring runoff. With heavy runoff, there will be plenty of water. If there is too much, it can be run through the turbines to produce surplus electricity or spilled over the dam and wasted.

Rather than waste it, we prefer to generate the electricity and sell it. The revenue directly benefits our B.C. customers by lessening the amount of borrowing Hydro has to do. The interest we would pay on that borrowing would have to be recovered through rate increases.

Some years are low-water years, when the spring run-off leaves a below-average amount of water in our reservoirs. If we did not have ample storage capacity to cover those low-water years, we would not be able to supply enough electricity for B.C.'s own needs.

As in any hydroelectric system, B.C. Hydro's plans to meet future demand must be based on the possibility of low-water years. Having surplus electricity to sell is a temporary situation whereas the need for a prudent amount of storage capacity is permanent.

Do you forecast too high so that you can have electricity to export?

No. B.C. Hydro's load forecast is simply our best estimate of the future electrical energy needs of our customers in B.C. These are estimates used for planning purposes—they are not targets. Hydro does not promote electricity sales, but is responsible for meeting the needs of its customers.

Each year, Hydro prepares a 10-year load forecast which takes into account current developments and outlooks about the growth of the economy. Today, our forecasts reflect more and more the effects of conservation.

Our plans for the future are based on these forecasts. We must look ahead ten years and more because it can take that long to plan and design new facilities and get them licensed.

The National Energy Board of Canada has ruled that Hydro's system is planned and built only to meet domestic electricity needs.

Why is B.C. Hydro encouraging the use of natural gas for home heating?

The reasons are threefold. Natural gas is produced in the province. The substitution of natural gas for oil is a major policy direction of the provincial government. The federal government is subsidizing the conversion from oil to other forms of home heating, natural gas being the major one.

How long will B.C.'s supply of natural gas last?

The ultimate gas reserves from producing areas are estimated at some 30 trillion cubic feet, which, at current projected use, should last until about 2030.

More may soon be uncovered because of new explorations at great depths and in previously unexplored areas.

When B.C.'s natural gas is exhausted or becomes too costly to produce, alternatives may be available in the form of Arctic gas or synthesized natural gas from coal. B.C. is well endowed with coal, and known and projected reserves could provide gas for many decades in the future.

Why have natural gas rates taken a big jump?

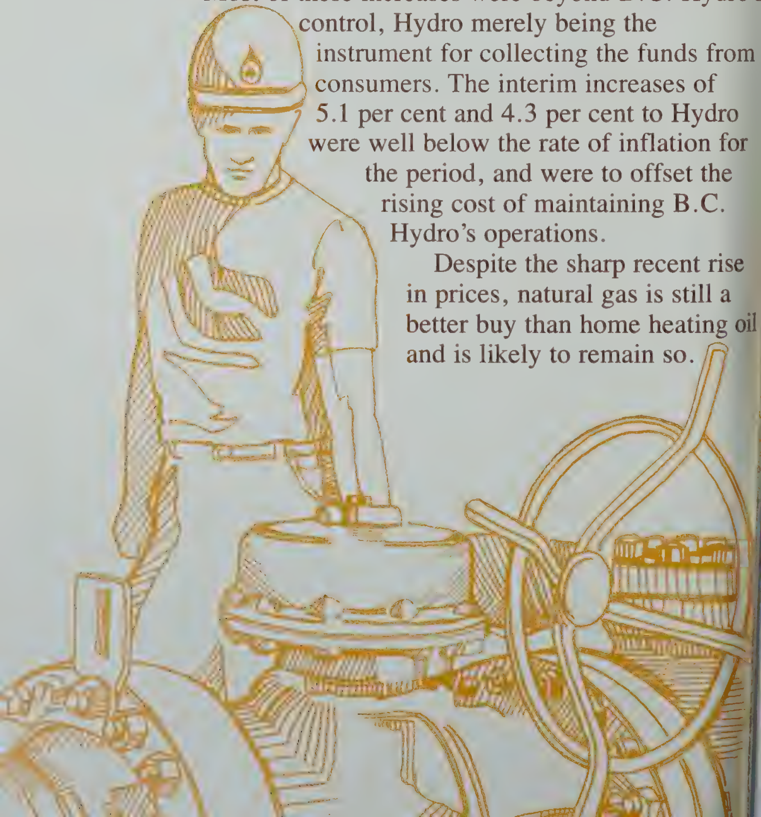
The cost to B.C. Hydro’s customers of natural gas rose by an average of about 90 pe cent between October 31, 1980, and April 1, 1982. The main reasons were increases granted by the provincial government in the wholesale price paid to Hydro’s supplier, Westcoast Transmission, and new levies payable to the federal government. There were also two relatively small increases granted to Hydro by the B.C. Utilities Commission during this period.

On November 1, 1980, the federal excise tax on natural gas was introduced, resulting in an increase of 13.6 per cent. As of May 1, 1981, the federal government introduced a special charge on natural gas sales to help pay the cost of acquiring the Petrofina company, adding another 6.1 per cent. On July 1, 1981, there was an increase in the federal excise tax, increasing natural gas bills by another 5.7 per cent.

The first of two increases in the wholesale price of gas occurred on August 1, 1981, and averaged 25.5 per cent. The first interim increase in the B.C. Hydro gas rate was effective the same date and amounted to 5.1 per cent. On February 1, 1982, there was a second increase in the federal excise tax, amounting to another 6.1 per cent, and the second increase in the wholesale price, averaging 1.8 per cent. Finally, on April 1, 1982, the second interim B.C. Hydro rate increase, averaging 4.3 per cent, became effective.

Most of these increases were beyond B.C. Hydro’s control, Hydro merely being the instrument for collecting the funds from consumers. The interim increases of 5.1 per cent and 4.3 per cent to Hydro were well below the rate of inflation for the period, and were to offset the rising cost of maintaining B.C. Hydro’s operations.

Despite the sharp recent rise in prices, natural gas is still a better buy than home heating oil and is likely to remain so.



Why doesn't B.C. Hydro pay taxes?

B.C. Hydro does pay taxes.

Because it is a provincial Crown corporation, however, B.C. Hydro is exempt from certain levies, such as federal income tax, which other businesses are required to pay.

B.C. Hydro pays school taxes like other taxpayers and it pays grants in lieu of taxes to the municipalities in which its facilities are located. These grants are calculated on the previous year's general and local improvement rates applied to all land and most buildings owned by Hydro, plus one per cent of the gross revenue from sales of electricity (and gas, where applicable) in each area. These grant payments are equivalent to what other utilities pay in British Columbia.

In 1981, B.C. Hydro paid a total of $123.7 million in grants to B.C. municipalities, school taxes and water rentals.

Why are your electricity rates higher than some others in the northwest?

Electricity rates vary across Canada and the U.S., depending on population density, terrain, methods of generation and average age of generating facilities.

Hydroelectric power sources in Washington state also provide irrigation and flood control benefits. Because of the combination of uses, the capital costs of electric generation are smaller and this is reflected in the rates.

Another important factor is that many hydroelectric projects in the U.S. Pacific northwest were constructed 50 years ago with low-cost federal funds. These projects are now paid off and operating costs are low. New generation requirements will probably be met by either costly thermal coal or nuclear plants. That means rates must increase to compensate for higher average plant costs.

Many years ago when interest rates were low, West Kootenay Power and Light, a subsidiary of Cominco, built low-cost run-of-the-river dams on the Kootenay River, using Kootenay Lake as a natural reservoir. While these dams were built for the power needs of Cominco, surplus capacity was made available to the public in the area.

Now they cannot meet the area's growing demands for the future. As a result, West Kootenay customers will have to share with B.C. Hydro customers the costs of new projects.

It is worth noting that, over the past eight years, B.C. Hydro rate increases have been among the lowest of all the provincially-owned electric utilities in Canada.

Might B.C. Hydro's $7 billion debt bankrupt British Columbia?

B.C. Hydro's debt is not paid by the province. It is paid from Hydro's revenue-producing assets.

Most families these days buy on credit. So does Hydro. The family knows the car or major appliance it purchases on credit will keep on giving service long after the debt is paid off. Hydro could pay off its entire debt in about 25 years if electricity demand and inflation ceased to increase and no new plants were needed.

Our cash outflow and costs have remained for several years at roughly five per cent of the gross provincial product, actually a somewhat lower proportion than they were in the 1950s and early 1960s.

Have you borrowed at low interest from government pension plans? Is this fair to people paying in to those plans?

Approximately 50 per cent o B.C. Hydro's outstanding debt is from provincial and federal trusteed funds. The interest rate paid for provincial trusteed funds was the rate the trustee of these funds could get on the open market at the time that Hydro borrowed from them. We negotiated in the same way as we would negotiate with underwriters on a public issue.

There were a number of advantages for both parties. Both benefitted because no commissions were paid to underwriters and there was a minimum of legal costs. The federal pension fund rate is determined by a formula set by the Canada Pension Plan Act, and these funds are allocated to the provinces in roughly the proportion that the provinces contributed to the plan. The interest rates charged to all provinces are the same.

So the pensioners are not being deprived in any way because of our borrowing from those funds.

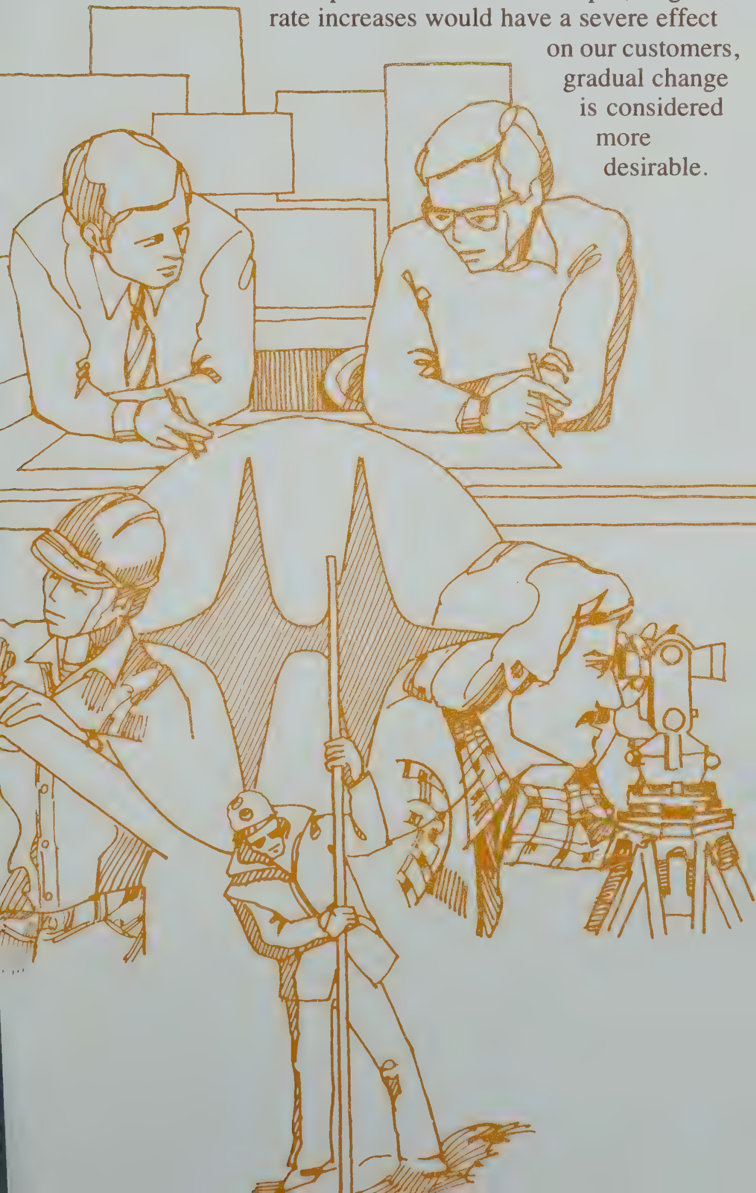
B.C. Hydro is now required by the provincial finance ministry to borrow in the public market to meet its financial needs.

If B.C. Hydro is a public company, why does it need to make a profit? Why are rate increases necessary when revenues already exceed expenditures?

B.C. Hydro is trying to reduce its debt and improve its equity position. Hydro must generate more of its own capital internally, so it must raise more money through rates.

We have been gradually improving Hydro's financial position in a planned program to achieve earnings before interest equal to 1.3 times the annual interest on debt by 1983/84.

Hydro needs to achieve this objective to enable it to borrow competitively and on economical terms in financing the additional facilities required to meet anticipated demand. Since rapid, large rate increases would have a severe effect on our customers, gradual change is considered more desirable.



Why does B.C. Hydro advertise when it isn't in competition with anybody?

There are many reasons for advertising besides those involving competition.

Advertising enables us to provide pertinent information to our customers, both residential and business. For example, we advise B.C. residents of events such as community meetings in areas where we propose to build projects. We use advertising to disseminate messages about safety, energy education, environmental concerns and power outages.

Advertising is also used to increase customer awareness of the need for energy conservation and to encourage requests for literature describing how to conserve energy and save money.

Advertising in publications read by the business community is used to attract investors.

B.C. Hydro provides information on a wide range of energy-related topics to newspapers, radio and television, but it is only through advertising that we can ensure that our customers are fully informed about all our activities and on how we can be of assistance to them.

If you would like more information . . .

Detailed information on many of the topics covered in this booklet is available from the Public Affairs Division of B.C. Hydro. These are some of our publications:

- B.C. Hydro Annual Report
- B.C. Hydro Energy Conservation Programs
- Power Perspectives (planning and possible future projects)
- Electricity exports benefit B.C.
- Hydro's financing and debt—the facts
- B.C. Hydro's use of herbicides on powerline rights-of-way strictly controlled by legislation
- Information bulletins and progress reports on projects under study

Booklets and brochures on most of Hydro's generating plants also are available. For copies of the material listed above, write to Public Affairs, B.C. Hydro, 970 Burrard Street, Vancouver, B.C. V6Z 1Y3. Telephone 663-2419 in the Lower Mainland, or your Hydro district office.

Audio-visual material

Films and video cassettes are available from our Audio-visual Library in Vancouver. Of particular interest is the Energy B.C. series, including Today's Options, The Wind Alternative, Our Solar Future, Biomass Prospects, Ocean Power and The Earth's Furnace. In all, some 22 films are available for use in schools and by public groups. For a complete list, contact the Audio-visual Library, 19th Floor, B.C. Hydro, 970 Burrard Street, Vancouver, B.C. V6Z 1Y3. Telephone 663-2659.

Public bookings of B.C. Hydro films should be made through Insight Media Centre, 7846 Edmonds Street, Burnaby, B.C. V3N 1B9. Telephone 525-2481.

Conservation information

Our Energy Conservation Division publishes data sheets and other material which provide specific information about energy conservation measures for homes, business and industry. Most of this material is available at Hydro district offices throughout the province, or by writing to Energy Conservation Division, B.C. Hydro, 7th Floor, 625 Howe Street, Vancouver, B.C. V6C 2T6. In the Lower Mainland, call 298-2411 and ask for Advisory Services.

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